

**Listing of Claims:**

Claims 1-17 (canceled)

Claim 18 (previously presented): A detection system comprising a plurality of detector units each having spaced-apart, opposite sides, the detector units being arranged adjacent to and in direct contact with each other, each detector unit having a light transmitter, a light receiver, an optical connection path terminating in first and second optical interfaces at the opposites sides, at least one optical anomaly along the optical connection path of the detector unit for coupling light from the light transmitter into the optical connection path and for coupling light out of the optical connection path to the light receiver, a control circuit connected to the light transmitter and the light receiver, and at least a part of a sensor electrically connected to the control circuit, respective optical interfaces of adjacent detector units being in direct areal contact with each other and forming an optical connection path extending along the plurality of detector units.

Claim 19 (previously presented): A detector system in accordance with claim 18 wherein the optical connection path is formed by one of a light conductor and a reflecting passage.

Claim 20 (previously presented): A detection system in accordance with claim 18 wherein the optical connection path extends in a straight line within each detector unit.

Claim 21 (previously presented): A detection system in accordance with claim 18 wherein at least one of the first and second optical interfaces comprise at least one of a terminal window transparent to the wavelength, a housing section transparent to the wavelength, a terminal adapter for the connection of a connection light guide, and a terminal adapter for the reception of a reflecting terminal element.

Claim 22 (previously presented): A detection system in accordance with claim 18 wherein the optical anomaly comprises at least one of a totally reflecting recess of the optical connection path and a partly transmitting reflection element.

Claim 23 (previously presented): A detection system in accordance with claim 18 wherein each detector unit has a single light transmitter for coupling light from the light transmitter into the optical connection path and a single light receiver for receiving light from the optical connection path.

Claim 24 (previously presented): A detection system in accordance with claim 18 wherein the optical interfaces, the optical anomaly, the light transmitter and the light receiver are arranged to optically connect the optical interfaces to each other and wherein each of the optical interfaces is optically connected to the light transmitter and to the light receiver.

Claim 25 (previously presented): A detection system in accordance with claim 18 wherein the light transmitter and the light receiver comprise a transceiver element.

Claim 26 (previously presented): A detection system in accordance with claim 18 wherein each detector unit has first and second optical connection paths connecting the first and second optical interfaces, the light transmitter with an associated optical anomaly being arranged at the first optical connection path and the light receiver with another associated optical anomaly being arranged at the second optical connection path.

Claim 27 (previously presented): A detection system in accordance with claim 18 wherein the at least part of the sensor comprises at least a part of an optoelectronic sensor, or a part of a sensor device including an optical or electrical interface to a sensor head.

Claim 28 (previously presented): A detection system in accordance with claim 18 wherein the optical interfaces of adjacent detector units are provided in a congruent arrangement.

Claim 29 (previously presented): A detection system in accordance with claim 18 including an adapter unit having an optical interface and at least one light guide output connected optically or optoelectronically thereto, the optical interface of the adapter unit being provided in a congruent arrangement to the optical interface of an adjacent detector unit.

Claim 30 (previously presented): A detection system in accordance with claim 18 including at least one terminal unit having a terminal reflector in a congruent arrangement to the optical interface and an adjacent detector unit.

Claim 31 (previously presented): A detection system in accordance with claim 18 including at least one terminal unit having first and second optical interfaces and an optical connection path connecting the first and second optical interfaces, the first and second optical interfaces being arranged congruently to the optical interfaces of an adjacent detector unit.

Claim 32 (previously presented): A detection system in accordance with claim 18 wherein the control unit is adapted to synchronize the optical bus.

Claim 33 (previously presented): A detection system according to claim 18 wherein the sensor is not optically coupled to the optical connection path.